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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/549,279	04/14/2000	Masaki Ichihara	P/2291-85	9019

7590 01/23/2004

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EXAMINER

CHANG, EDITH M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 01/23/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/549,279

Applicant(s)

ICHIHARA, MASAKI

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 3 and 7-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 5, 12-14 and dependent claims 2 and 6 have been considered, and are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 5, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secord et al. (US 6097712) in view of Natali et al. (US 6317412 B1).

Regarding **claims 1 & 13**, except explicitly specify the I-Q plane, Secord et al. discloses a digital circuit and its method for shifting a frequency band of a signal vector to a predetermined frequency band (Fig.3, Fig.4-6), comprising: control data generated from a frequency difference (42-46 Fig.4 where the inputs ω_c , $\Delta\omega$ of 42-46 provide the control data), note that there is inherently a control data generator generating the control data ; and a signal vector rotator for rotating the signal vector (42 Fig.4 is the rotator). However Natali et al. teaches I-Q plane (24 FIGURE 8), as the Secord et al.'s receiver and its methods for CDMA spread-spectrum communications, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Natali et al.'s teaching implemented in Secord et al.'s rake receiver, to

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receive and downconvert the received CDMA signal on the I-Q plane to A/D for digital processing the received multi-carrier CDMA signal.

Regarding **claims 5 & 14**, except explicitly specify the I-Q plane, and the analog-to-digital converter that obviously included elements of the Secord et al.'s CDMA multi-carrier receiver/rake receivers, Secord et al. discloses a digital circuit and its method for shifting a frequency band of a signal vector to a predetermined frequency band (Fig.3, Fig.4-6), comprising: control data generated from a frequency difference (42-46 Fig.4 where the inputs ω_c , $\Delta\omega$ of 42-46 provide the control data), note that there is inherently a control data generator generating the control data; and a signal vector rotator for rotating the signal vector (42 Fig.4 is the rotator), a band pass filter (48 Fig.4). However Natali et al. teaches I-Q plane (24 FIGURE 8) and the analog-to-digital converter for converting a received analog signal vector to the signal vector (25 FIGURE 8), as the Secord et al.'s receiver and its methods for CDMA spread-spectrum communications, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Natali et al.'s teaching implemented in Secord et al.'s rake receiver, to receive and downconvert the received CDMA signal on the I-Q plane to A/D for digital processing the received multi-carrier CDMA signal.

Regarding **claim 12**, except explicitly specify the I-Q plane, and the analog-to-digital converter that obvious included elements of the Secord et al.'s CDMA multi-carrier receiver/rake receivers, Secord et al. discloses a digital circuit and its method for shifting a frequency band of a signal vector to a predetermined frequency band (Fig.3, Fig.4-6), comprising: control data generated from a frequency difference (42-46 Fig.4 where the inputs ω_c , $\Delta\omega$ of 42-46 provide the control data), note that there is inherently a control data generator generating the control data;

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and a signal vector rotator for rotating the signal vector (42 Fig.4 is the rotator), a band pass filter (48 Fig.4). However Natali et al. teaches I-Q plane (24 FIGURE 8, where the quadrature frequency converter downconverts a quadrature signal) and the analog-to-digital converter for converting a received analog signal vector to the signal vector (25 FIGURE 8), as the Secord et al.'s receiver and its methods for CDMA spread-spectrum communications, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Natali et al.'s teaching implemented in Secord et al.'s rake receiver, to receive and downconvert the received CDMA signal on the I-Q plane to A/D.

4. Claims 2, 4, & 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Secord et al. (US 6097712) in view of Natali et al. (US 6317412 B1) as applied to claims 1 and 5 above, and further in view of Hellberg (US 6167102).

Regarding **claim 2**, Natali et al. discloses an analog-to-digital converter for converting a received analog signal vector to the signal vector (25 FIGURE 8), but does not explicitly specify a phase data generator and converter. However Hellberg teaches the phase data generator and converter of plurality bits (340 FIG.3). As Natali et al. teaches using NCO to provide the frequency (41 FIGURE 8 '412) in the control data generator, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Hellberg's teaching in the NCO to detail its operation to provide the phase to have a more efficient NCO with simpler computation (column 3 lines 48-55).

Regarding **claims 4 & 6**, further Hellberg et al. teaches the phase data generated by computing an integral multiple of a unit angle which is obtained from a frequency shift (FIG.2,

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column 2 lines 25-30 where the frequency/sinusoidal value is the one of eight distinct 210 with a unit angle multiplied by 1 to 8). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Hellberg's teaching in the NCO to detail its operation to provide the phase to have a more efficient NCO with simpler computation (column 3 lines 48-55).

Allowable Subject Matter

5. Claims 3, 7-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

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Edith Chang
January 6, 2004

A handwritten signature in cursive script, reading "Chieh M. Fan".

**CHIEH M. FAN
PRIMARY EXAMINER**